operations along the river that provide rental equipment such as paddle boards, kayaks, and fishing gear. Walking trails have also been established at a few locations along the river. Maintenance and improvement of water quality is a key factor in providing public recreation opportunities on the Wallkill River.

5.3 Soil Study Results

5.3.1 Field study results

As summarized in Section 4.2.2.2, soil profiles were described at representative boring and shovel pit locations throughout the Sites and within each Reference Area. During the March 2022 field event, core sampling was limited on the MFTC to within the paddock areas due to wet soil conditions and our objective to minimize site disturbance and not interrupt horse training operations. Other potential sample locations were not utilized due to the presence of facility infrastructure and buried utilities. Photographs of the soil profiles are provided in Appendix E. Description logs documenting the presence or absence of hydric soil indicators are provided in the Wetland Determination Data Forms in Appendix H.

Varying depths of fill and redistributed soil and rock material were documented throughout the MFTC and Equine Site. MFTC Site fill was characterized as a mixture of rock and soil, with nonuniform soil colors and textures, and no consistent soil structure or horizonation. Cobble, gravel, and larger rock fragments of different size, degree of roundness, and origin were prevalent throughout much of the fill material. On the Equine site, additional fill materials were noted such as brick, concrete, asphalt, woody debris, and other anthropogenic materials. The transition zone between fill and original soil at the Sites was typically abrupt and noted in most profiles by the presence of fine roots and other organic material indicative of buried topsoil overlaying soil horizons consistent with the expected soil series mapped in the area (Figure 3.4.1). The transition between fill and original soil is indicated in the profile photographs in Appendix E. There were a number of soil boring and shovel pit locations where excavation below the fill could not be accomplished and some cores where material was not recovered by the drill rig and could not be characterized.

Based on soil descriptions (Appendix E), the original soil properties observed at the Sites and Reference Areas were generally consistent with the range of characteristics and series presented in the soil survey (Olsson, 1981). There were inclusions within the larger mapping units of soils consistent with competing and geographically associated soil series. Overall, the subsurface horizons underlaying the topsoil were found to have finer textures and less overall coarse channery material than the typical descriptions of soil series. The soils' finer textures, stratified or varved layers, and lack of soil structure support slower water movement which contributes to

a longer duration of saturation within the upper soil horizons under natural conditions, i.e., without fill on the Sites.

Hydric soil indicators documented within the natural soils described on the Sites (below the fill) and within the Reference Areas include the following as described in the Regional Supplement:

- A11 – Depleted Below Dark Surface
- A12 – Thick Dark Surface
- F2 – Loamy Gleyed Matrix
- F3 – Depleted Matrix
- F6 – Redox Dark Surface
- F7 – Depleted Dark Surface

Table 5.3.3.1 presents a summary of the hydric soil indicators documented by soil profile location. A total of 33 soil boring and shovel pits were advanced and logged on the MFTC Site. At 22 of those locations the original soil surface was encountered and identified, and the soil physical properties logged with depth below the original soil surface. Hydric soil indicators were clearly identified at 19 of the locations. At the remaining 11 locations, the original soil could not be described due to mixing with fill material or difficulty of recovery of soil in the cores due to the presence of rock and fill. At the Equine Site, 14 soil boring and shovel pits were advanced and logged. Of these, the original soil surface was encountered and identified at 13 locations and soil profiles were described. Hydric soil indicators were identified at 10 of the boring locations. At one location, the core could not be described due to the difficulty of recovery due to presence of construction debris fill material. At both the MFTC and Equine Site the most common hydric soil indicators noted were F2 (Loamy Gleyed Matrix) and F3 (Depleted Matrix). Historic channel bottoms were confirmed on both the MFTC (Boring SR27) and Equine (Boring EQ01) Sites.

5.3.2 Field Study Soil Results and Inference to Conditions Prior to Earthwork Activities

Within the Reference Areas and vicinity, soil changes were noted corresponding to changes in landscape (geomorphic) position as reflected in the soil mapping units. Reference Areas were not relied upon exclusively to infer soil conditions at the Sites prior to filling and other land disturbing activities but were used as points of confirmation in comparing soils identified at similar landscape positions. For example, original soil properties observed in Zone C (Figure 4.2.1.2) were consistent with those soil series found in broad flats and were comparable to those observed at the Reference Area in Highland Lake State Park. In considering soils observed in the

Reference Areas and original soils underlaying the fill on the Sites, the presence of hydric soil indicators has been confirmed along the original land surface footslopes, broad flats, and depressional areas within both the MFTC and Equine Site.

5.3.3 Volume of Fill Overlying Wetland Soils

The depth of fill was determined at each core/boring location where the original soil was identified, and hydric soil indicators were determined to be present below the fill. These depths were broadly grouped and averaged based on location and inferred impact to the site. At the MFTC Site, the depth of fill to the original wetland soil surface averaged approximately 3.4 feet within the central track and paddock area, and approximately 10.4 feet in the areas outside of the track. The average depth of fill at the Equine Site above the original wetland soil surface was approximately 10.4 feet. Based on the areal extent of wetlands delineated on the Sites (see Section 5.6 below), the estimated volume of fill within wetland areas is approximately 293,000 cubic yards (CY) at the MFTC Site and 59,000 CY at the Equine Site, respectively.

5.4 Vegetation Study Results

Vegetation data was collected at the MFTC, Equine Site, and Reference Areas from September 26, 2022, to September 28, 2022. Vegetation data collection followed the guidelines and requirements in the Manual and the Regional Supplement. Vegetation plots were centered at the location of each soil profile sampling location (Figures 4.2.2.2.1, 4.2.2.2.2 and 4.2.2.2.3). Within each sampling location all plant species present were recorded along with a visual estimate of coverage for each species. Vegetation data was collected to provide quantitative and qualitative details regarding the existing vegetation structure and species composition at the MFTC and Equine site post- impact. The Indicator Status of each species identified was established using the USACE NWPL. The results of the vegetation study are recorded in wetland data forms for each sampling location for the MFTC, Equine Site, and Reference Areas. Site-specific species lists are included for each sampling location (Appendix F) within each wetland delineation data form included in Appendix H.

5.4.1 Field study results

Because both the MFTC and Equine Site had received several feet to over 10 feet of fill, vegetative communities were completely altered at the time of the field visit, and no interpretation of the species composition present at the sites could be made prior to impact. Historical aerial photography does provide inference to the structural composition of the vegetation prior to impact and aerial photographs were reviewed from 1958 to 2021 to interpret the vegetative communities that occurred there.